

# Energy efficiency upgrades ease strain of high energy bills in low-income families

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Low-income families bear the brunt of high-energy costs and poor thermal comfort from poorly maintained apartment buildings. To study how energy efficiency upgrades could help these households, researchers at Columbia University's Mailman School of Public Health surveyed residents in a low-income community in New York City. They found that while energy efficiency upgrades varied significantly by ownership status, low-income single-family homeowners reaped the greatest direct benefits. Results overall showed that respondents experienced improved thermal comfort, enhanced health and safety and reduced energy costs as a result of the upgrades.

This study examines a full range of potential benefits associated with [energy](#) efficiency among low-income homeowners, tenants and landlords. Findings are online in the journal *Energy Research & Social Science*.

"Overall, energy efficiency upgrades are a promising intervention to mitigate the energy and structurally related challenges facing low-income households," said Diana Hernández, PhD, assistant professor of Sociomedical Sciences at the Mailman School of Public Health.

"However, results also illustrated that weatherization alone was insufficient to address all of the housing comfort and safety issues facing low-income households.

Dr. Hernández and her research team surveyed 20 heads of households as well as landlords of buildings in a variety of housing types that had

recently undergone upgrades. Most participants identified as Hispanic or Latino (80 percent), and more than half of participating households had at least one child under 18 years old living in them. Many participating households were also inhabited by elderly residents who often suffered from chronic health conditions exacerbated by energy insecurity.

Results revealed different experiences of low-income renters compared to homeowners. Renters cited greater physical comfort and less economic stress; homeowners realized lower heating costs, an increase in property values, and an improvement in landlord/tenant relationships.

During in-depth interviews, participants reported significant discomfort from uncomfortably cold and drafty homes during the winter months for a variety of reasons, including poor building conditions, high costs of heating fuel, and broken or inactive boilers. More than half expressed worry that they would not be able to pay their energy bills, or had cut back on basic household necessities in order to pay their energy bills. Half of participants said that they had either skipped paying their energy bills or made partial payments during one or two months within the previous year. Financial strains and thermal discomfort presented economic challenges to participants while also affecting mental health and stress levels.

Of the more than half of participants who reported reductions in energy costs as a result of the upgrades, the majority cited savings of 30 percent or \$20-60 per month. Landlords reported significant savings from the upgrades, mostly due to lower heating fuel prices, even after accounting for upgrade costs. In addition, homeowners, tenants, and landlords reported an improved sense of safety or wellbeing, reduced stress and anxiety, and positive feelings about an investment in the property.

"While our study showed that the energy efficiency upgrades were largely beneficial, in most cases, the systemic nature of the cited

problems are beyond the reach of [energy efficiency](#) upgrades and require more intensive housing and policy interventions," noted Dr. Hernández. "Recommendations for addressing this should focus on: regulations that raise minimum indoor temperature standards which now are way below ideal thermal comfort levels, debt forgiveness with the cooperation of utility companies, subsidized [energy costs](#) to low-income households through fuel assistance and rate variability for hardship, and increasing consistent funding for the Weatherization Assistance program or similar programs that offer no-cost or low-cost upgrades to low-income households."

Provided by Columbia University's Mailman School of Public Health

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